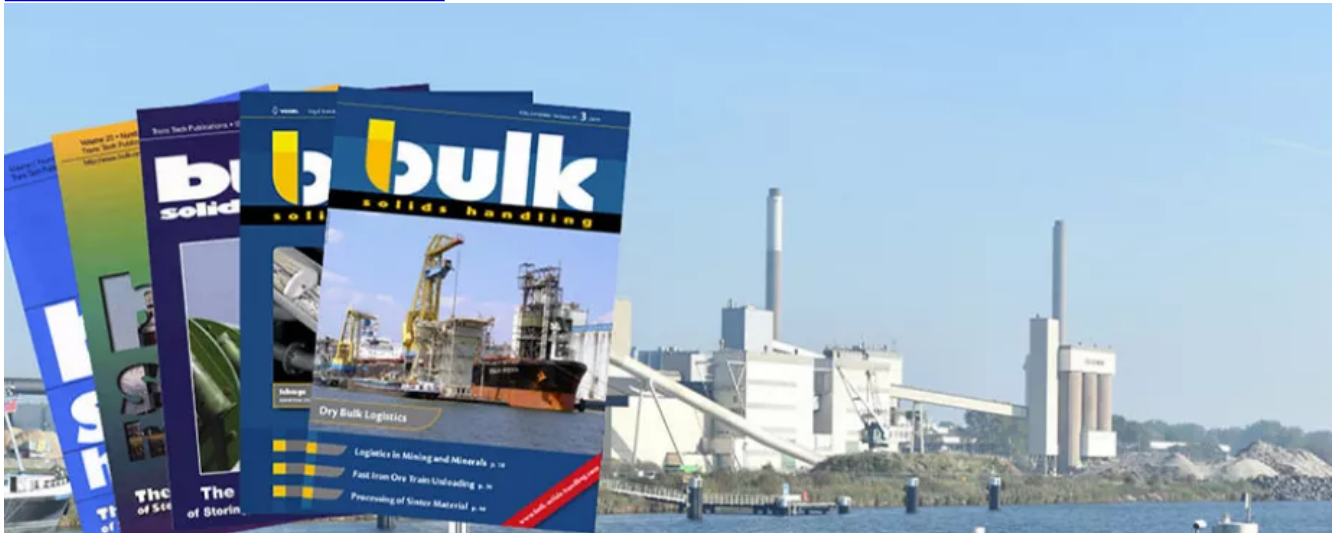




Whitepaper

New Developments in Vertical Conveying with Special Emphasis on the Transshipment of Bulk Materials

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A new vertical conveying method based on the FLEXOWELL-technology is introduced, which lends itself to vertical and inclined bulk solids conveying in deep shafts in open pit mining, in processing plants and blast furnace charging in filling silos and dumps etc. and especially for unloading of ships.

In all branches of the transshipment and conveying of bulk materials careful attention to the cost/benefit ratio is now more important than ever. This applies equally to invested capital and to daily operating costs.

With the aid of FLEXOWELL-technology and of the newly developed conveying systems which it allows it is now possible to overcome the performance limitations of conventional conveyor belting and to break through into new dimensions in conveying technology. These new developments have already been successfully applied in practice. Innovative designs combine vertical conveying with horizontal loading discharge sections eliminating the need for material transfer stations.

The vertical conveying system must meet the following important requirements: dust-free and noiseless environmentally acceptable conveying; high degree of

functional reliability coupled with long system service life through extensive use of resilient corrosion resistant materials operational flexibility ranging from horizontal to vertical conveying ; smooth directional transition widely varying choice of conveyor route configurations; and minimum space requirement for vertical conveying. These requirements apply to the conveying of all kinds of bulk materials, with lump sizes up to 400 mm and conveying capacities from 2,000 to approximately 40,000 t/h.

The new CEWELL conveying system provides radial guidance of the belt to differentiate it from the vertical S-conveyor. Each system meets specific performance criteria.

The S-conveyor can elevate 2,500 m³/h up a 300 m vertical lift. The CEWELL conveyor can elevate 10,000 m³/h up a 30 m lift. These alternatives permit innovative design of conveying plants for the transshipment of bulk materials.